

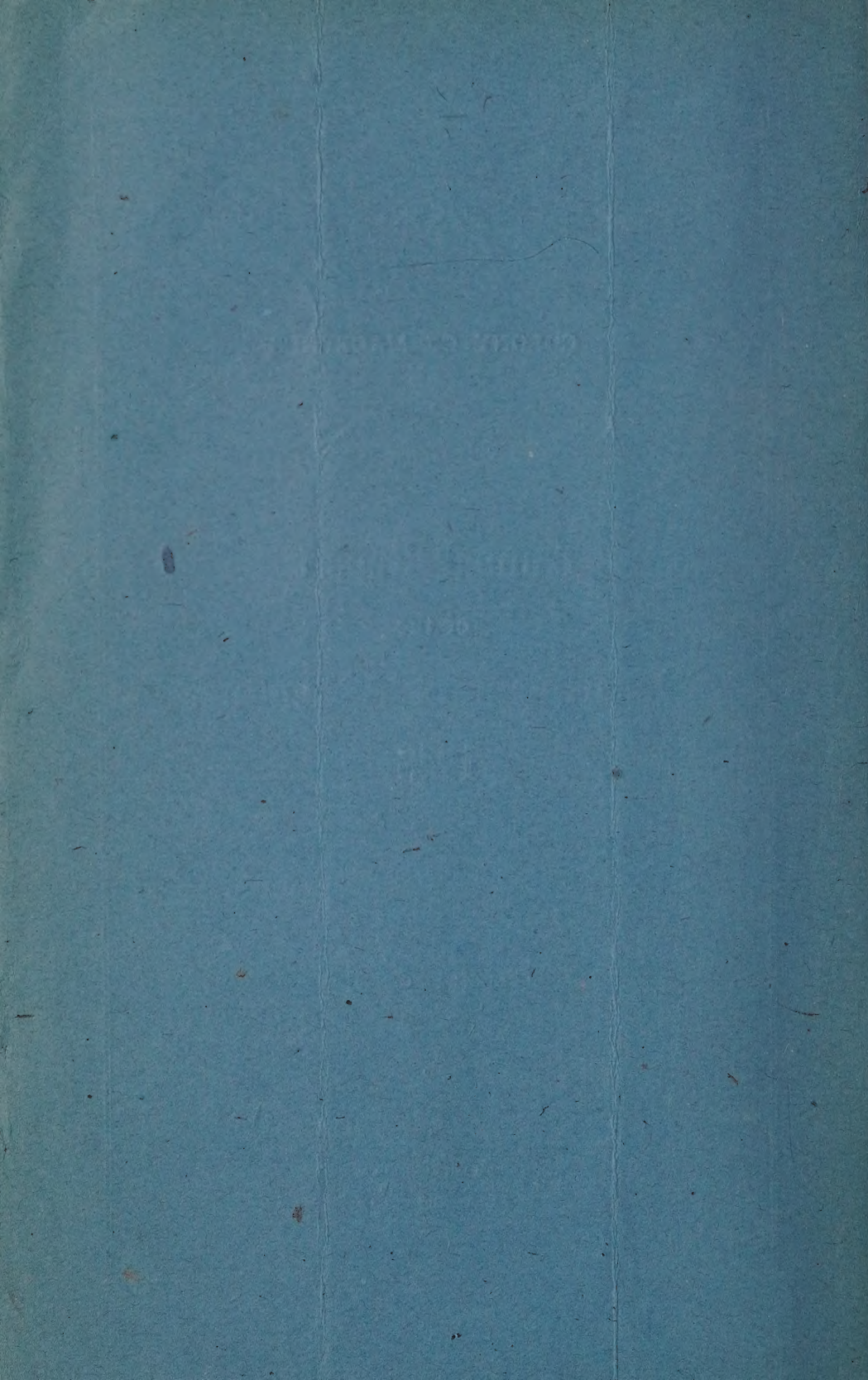


COLONY OF MAURITIUS

Annual Report
of the
Department of Agriculture
1943

[PRICE: 90 CENTS]

PRINTED AND PUBLISHED BY
J. H. BOWKETT, GOVERNMENT PRINTER,
PORT LOUIS, MAURITIUS, 1944.





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PART I

1. Meteorological Conditions

Temperature was generally below normal except in January, August and December. Winter was longer than usual with low temperatures persisting until November. Rainfall was, in general, deficient except in January, June, August and December.

The cold and dry winter that prevailed was very favourable to the maturation of the cane, sucrose per cent cane having attained particularly high values in some localities.

Two cyclones occurred in 1943, one in February and the other in March, while unsettled weather conditions accompanied by heavy rains prevailed towards the end of December owing to some distant disturbance westward of Mauritius.

2. Sugar Production

In spite of the general deficiency of both temperature and rainfall, yields were quite satisfactory. The total cane reaped approximated 2,566 thousand metric tons, and extraction of sugar per cent of cane 12.11. The total commercial sugar produced was 310.72 thousand metric tons, in excess of 10 per cent on the figure forecasted in September.

Of the total produced, 262.36 thousand metric tons consisted of raws; granulated whites were 47.75 thousand metric tons, and low sugars made up the balance.

3. Area under Sugarcane

At the beginning of 1943, the area under cane was estimated at 128,000 acres.

An order was issued in July, 1943, for the compulsory planting by all estates of 20 acres or more, of a proportion of 5 per cent of their cane lands in food crops, so that by the end of 1943 there had been a further reduction of the area under cane.

4. Sugar market and disposal of the sugar crop

The total production was purchased by His Majesty's Government.

5. Labour and cost of living

Owing to labour shortage and difficulties, factories could not, in general, work to their maximum capacity with the result that the crushing season was extended. The planting and cultivation of food crops was also severely affected, particularly in some localities.

At the end of the first quarter of 1943, the figure for cost of living was indexed at 218.5, as compared to 100 pre-war.

The preparation of general cost of living statistics has been discontinued on the ground that the adopted weights have become, in regard to existing supplies, generally meaningless. — Figures relative to the cost of living of an average labourer's family are now obtained by the Labour Department.

6. Importation of agricultural machinery and fertilizers

A certain quantity of machinery, tramway material and fertilizers for use on sugar estates was imported in 1943.

7. Insect pests and plant diseases

A new centre of infestation of *Phytalus Smithi*, Arrow was recorded at St. Felix while a recrudescence of this pest was evident at Gros Bois. No severe borer infestation was reported, and the position with respect to the scale insects of sugarcane remained stationary.

Maize plantations suffered somewhat from attack by cut worms.

A disease of sweet potato caused by *Colletotrichum* sp. seriously affected plantations made under the Food Production Scheme on an estate of the Central Plateau. This is the first record of the disease in the Island. (See Part II, paragraph 2 C of the Report of the Plant Pathology Division). On tobacco, Black Shank disease was reported from all districts: Granville wilt caused damage to certain plantations in Pamplemousses district; Mosaic disease caused severe damage in a few plantations and isolated cases were reported from all districts.

8. Tobacco

The production of tobacco increased during the year.

9. Fibre, Pineapple, Tea and Coconut

Fibre.—The Sack Factory continued operations throughout the year, manufacturing bags and yarn from locally produced fibre.

Pineapple.—As already mentioned in last year's report, the canning factory has ceased operations. The present owners of pineapples sell their fruits locally.

Tea.—The area planted in tea increased considerably during the year.

Coconut.—The coprah being used by the Innova Refinery is of good quality and its oil content is about 654 kilos per ton of coprah.

10. Alcohol

Distilleries continued their operations producing industrial alcohol and rum.

11. Food Crops

A new order was issued in July, 1943, for the compulsory planting by all estates of 20 acres or more of a proportion of 5 per cent of their cane lands in food crops, so that the total area devoted to food production represents therefore $27\frac{1}{2}$ per cent of the acreage under cane of these estates in 1942.

It is estimated that approximately 40,000 acres were planted under food crops during the year. This figure includes two maize plantations per annum on some estates.

A new planting programme was prepared with a view to increasing maize production at the expense of sweet potato areas.

A scheme for maize improvement and selection on estates was drawn up and circulated. In addition, the Geneticist of the Sugarcane Research Station is carrying out special selection work and breeding of maize at Richelieu Experiment Station.

12. Veterinary and Livestock

The sanitary condition of herds was generally satisfactory. Trypanosomiasis was practically inexistant, while the cleansing of herds from tuberculosis was continued with encouraging results.

Following the importation of pure bred stock from South Africa two years ago, the number of pigs of good standard has increased to a sensible extent through crossing with local breeds. Owing to animal food shortage however, especially animal proteins, the rate of increase of good stock is lower than it would have been under normal dietary conditions.

13. General

I wish to record my deep appreciation of the measure of assistance which I have unhesitatingly been accorded by the staff of the Department during the year.

The work of the Sugarcane Research Station and the various Divisions, has, as usual, been conducted in an atmosphere of close co-operation with the planting community of the Island. To the very large number of cultivators—members of all classes of the community—who have afforded opportunities for special investigation, I take this opportunity of presenting the gratitude of this Department.

G. E. BODKIN,

Director of Agriculture.

PART II

Report on the Sugarcane Research Station and Divisional Reports of the Department of Agriculture

Sugarcane Research Station

Once again I have to report that the work of the Station has been further curtailed because of staff reductions and increased war work. The Geneticist returned to his normal post on the 4th of May, but in addition to cane breeding, he was also entrusted with the task of a maize improvement scheme. On 9.10.43, however, the Cane Breeding Officer was appointed as Acting Statistician and Registrar of the Agricultural College on the retirement of the holder of that post. The Botanical Division, already short of the Botanist, was still further reduced by the Scientific Assistant being detached to start a manioc drying scheme from the 3rd May, 1943 to the 1st December, 1943.

The experimental work on estates had to be reduced on account of labour shortage, some experiments taking three or four times as long to harvest as was expected. The cane breeding programme was kept almost up to the pre-war level, and so far as possible this will be the continued policy of the Station until the return of normal times. The excellent crop of approximately 310,000 tons of sugar in spite of a reduction of 20 per cent. in the area under sugarcane is to a large measure due to the continued extension of varieties bred by the Station. No new cane variety has been released during the year, but a large number of cuttings of M. 112/34, released in 1941, have been distributed.

The control of fertilizer distribution has been again carried out by the Officer-in-Charge. The sugar crop of 1943 received less nitrogenous fertilizer than in previous years, and practically no potash fertilizers, but the amount of phosphatic fertilizer was normal. In addition, a larger proportion of molasses produced by factories was used for the production of alcohol, so that it could not be returned to the fields in the usual quantity. The fertilizer situation for the year 1944 with respect to nitrogenous and potash fertilizers is fairly satisfactory, but at the time of writing, phosphatic fertilizers are in rather short supply.

A short account of the work performed by the Station during the year will be issued as a separate report.

N. CRAIG,
Officer in charge,
Sugarcane Research Station.

Agricultural Division

1. Central Experiment Station, Reduit

The propagation of various food plants was maintained throughout the year in order to have abundant planting material at the disposal of the public when required.

As there was a shortage of local rice seed and many applications having been received from planters, paddy was imported from Madagascar and ten tons were distributed by the end of the year. One ton of wheat and two tons of lentils were also imported for planting purposes.

The Carob trees, *Ceratonia siliqua*, Linn. bore a large crop of pods which were much appreciated by the cows at the Government Dairy. Every effort is being made to encourage the propagation of this interesting tree.

Good yields of Chaulmoogra seeds, *Hydnocarpus Wightiana*, Blume were obtained; they were sent to the Chemical Division for oil extraction. In view of the present difficulty of obtaining this drug, it is interesting to note that an appreciable quantity is now being produced locally. The plantations could easily be extended if necessary. *Coffea excelsa* fruited abundantly; seeds from selected trees were propagated.

All buildings, roads and fields were kept in good condition.

2. Barkly Experimental Station, Beau Bassin

A large number of fruit and other economic plants were raised in the Nursery for sale to the public. The revenue amounted to Rs.1649.39.

Free distribution of planting material of food plants were made to Allotments, School Gardens and various Government Institutions etc.

As in past years, this Station was frequently visited by members of the public.

Consignments of fruits were distributed free to the members of H.M. Forces and Ships calling at Mauritius.

3. Royal Botanical Gardens, Pamplemousses

The fields of various food plants were extended in order to meet increasing demands for planting material. A large section of the experimental station was devoted to the raising of vegetable seeds which in the past, had to be imported. 19,600 kilogs of sugar canes not required for propagation were sold to Belle Vue factory.

The propagation of economic plants and fruit trees received special attention. 441 letchis layers, 275 mango grafts, 82 bread fruit layers, etc., were supplied to Abercrombie Nursery.

The ornamental section of the gardens was kept in good condition throughout the year.

4. Abercrombie Nursery

This nursery continues to supply increasing quantities of plants to the public. The revenue for sales amounted to Rs. 1,968.38 as compared with Rs. 1,362.03 for 1942 and Rs. 768.40 for 1941.

5. Allotments

There are now 190 plot holders distributed at

Barkly	Elysée
Bois Marchand	Bigara
Richelieu	Piat and de Billot
Malherbe	Moona

Twenty four huts were erected on the new allotments on Crown land "Piat and de Billot." Good progress was made on most of the allotments where various food crops were raised throughout the year.

All the allotments are regularly visited by Officers of the Agricultural Division in order to instruct the plot holders how to obtain maximum yields. Free supplies of planting material and of timber and straw were made when required.

6. School Gardens

Visits were paid by the Senior Agricultural Officer and his Assistants to the 32 registered school gardens. Advice was given to the Head Teachers, their staff and pupils as to the best method of sowing, planting, manuring, control of diseases, insect pests, etc.

No competition for the award of prizes was held.

7. Government House Grounds

The grounds at Le Réduit and Port Louis were maintained in good condition throughout the year.

8. Food Settlements: St. Martin, La Ferme and St. Thomas

These settlements of a total area of 84 acres are leased to shareholders of St. Martin—La Ferme Co-operative Credit Society for the cultivation of food crops. They are often inspected by the Assistant Agricultural Officer.

9. Visits to estates and planters

135 visits were paid to planters by the Senior Agricultural Officer in connection with the food crop campaign.

The Agricultural Instructors regularly visited small planters in all the districts and gave them every possible advice and assistance.

10. Tea

This industry has made much progress since the war.

11. Pineapples

Plantations were made on a limited scale to produce fruits for the local market.

12. Cinchona

The *Cinchona succirubra* plantation in the "Trou aux Cerfs" continues to make progress; there are now 81 tall and 23 young trees well established. 30 young plants were also planted on Crown land "Piat and de Billot"; some are growing well and others rather slowly.

Seedlings of the same species raised from seeds received from the Amani Research Station in East Africa have recently been planted; this area is still in the experimental stage.

13. Higher Agricultural Education

In the absence of the Agronomist, at present on military service, the lectures to the Agricultural College students in Agricultural Geology and principles of Tropical Agriculture were delivered by Agricultural Instructor E. Rochecouste now acting Plant Inspector in the Division of Plant Pathology.

The Senior Agricultural Officer lectured on tropical crops to third year students.

The practical field demonstrations were in charge of the Agricultural Officer.

14. Food Crop Plantations

A certain acreage of manioc was planted under the Food Production Scheme at Terre Rouge and Richelieu but unfortunately the yields on both plantations were low. This was due to the drought during the growing period and to numerous thefts of roots notwithstanding employment of day and night watchmen.

15. General

The Senior Agricultural Officer supervised the planting of manioc at Richelieu and Terre Rouge; he was also Regional Food Production Officer for the Grand Port District. The Agronomist is still on active service.

The Agricultural Officer assists the Malaria Control Officer with the control of labour in the campaign against the mosquito. This officer is also a Weighbridge and Tea Inspector and the Regional Food Production Officer for the Moka district.

The Assistant Agricultural Officer and the Agricultural Instructors act as Assistant Regional Food Production Officers in several districts.

The Senior Agricultural Officer retired on pension on the 20th September; he has been re-employed for another year.

C. A. O'CONNOR,
Senior Agricultural Officer.

Co-operative Credit Societies Division

In accordance with the terms of the previous year's report, the strength of the Inspectorate was augmented by the appointment of a whole-time Junior Inspector as from the 11th June, 1943.

The personnel attached to the movement in an official capacity at the close of the year consisted of—

- (a) Registrar, who is also Director of Agriculture;
- (b) Joint Registrar;
- (c) Assistant Registrar;
- (d) four whole-time Inspectors of whom one is stationed at Rodrigues;
- (e) a Clerical Assistant.

2. Three new Societies were registered during the year. The number of Societies in active operation on the 31st December was 68 in Mauritius and 11 in Rodrigues. Excepting the Rodrigues Fishermen Co-operative Credit Society Limited, the others are all of the Unlimited Liability type.

3. Members of Societies previously existing continued to increase their shareholdings. Advances from State Funds totalling Rs. 54,600 were made to 12 Societies in Mauritius and 2 in Rodrigues; repayments amounting to Rs. 15,730 were effected to the Treasury as instalments due by 34 Societies. During the same period Rs. 3,838 interest were paid on Government Loan held. The aggregate amount of the advances due to Government as on the 31st December was Rs. 164,195 and was held by 46 Societies in Mauritius and 10 in Rodrigues.

4. The system of issuing loans to members according to the policy referred to last year, was maintained. (See Part II, paragraphs 3 and 4 of the Report of the C.C.S. Division in the Annual Report of 1942). The debtors of the Societies as well as some of the non-indebted ones joined in the collective sale of their sugar canes through the agencies of their Societies.

5. A close control has continued to be kept over the operation of the Societies, and the work of the Managing Committees was closely supervised. The books of all the Societies were inspected at regular intervals and the audit inspection of their accounts was carried out during the months of May and June. The plantations of indebted members were also visited.

6. To facilitate the attendance of members the annual general meetings of all the Societies were held late in the afternoon. On these occasions—

(a) individual members were given every opportunity of making enquiries relative to questions they do not understand and of ventilating their grievances, if they exist, in relation to the management of their Society ;

(b) investigation was made into the affairs of members who, through sheer ignorance and simplicity have fallen an easy prey of the ubiquitous middleman.

After the termination of each meeting a letter reviewing the condition of affairs of the Society and giving advice on all points where guidance appeared necessary, was despatched to the President.

7. One Society elected to declare a dividend this year. As a means of checking the hunger for dividends which is a striking feature of the members of such Society, it was impressed upon them that the distribution of cash dividends on shares must be regarded as opposed to the spirit of agricultural co-operation and is in no way desirable. The treating of dividends as instalments towards the purchase of non-dividend bearing shares designated B shares was held out to the members as being the most desirable course to pursue, since by this means, Capital which has got together as the result of considerable effort is retained in the Society while individual shareholders have their credits in the Society thereby strengthened.

8. The draft to consolidate the Regulations made under section 36 of the Co-operative Credit Societies (Consolidation) Ordinance No. 49 of 1941 referred to in the previous year's report, is still on the stocks.

9. The work of the Societies forms the subject of a special report issued after the close of the financial year. The details of the working thereof for the financial year ended 30th June, 1943, are shewn in such report.

10. The outstanding feature of the year's work lies in a continuation of satisfactory development of the movement. The condition of the Societies is sound and there is again a marked increase in the share Capital, more active working and a maintenance of the good standard of recovery.

The following comparative statement of the general progress of the movement in the years 1931-32 and 1942-43 affords a rough idea of the results achieved since the adoption, in 1943, of the policy of closer supervision—

	<i>Mauritius</i>			<i>Rodrigues</i>	
	1931-32	1942-43		1931-32	1942-43
Number of Societies in operation	28	66	...	1	11
Total membership ...	2,252	3,756	...	13	219
Share Capital ...	Rs. 72,884	143,316	...	220	3,545
Members Deposit ...	Rs. 517	2,005	...		
Non-members Deposit ...	Rs. 2,600	5,710	...		
Government Loan ...	Rs. 4,620	155,000	...	60	5,775
Reserve Fund ...	Rs. 212,121	212,149	...	—	1,468
Members indebted ...	1,553	1,979	...	—	197
Of whom in arrears ...	965	90	...	—	1
Total loans due by members ...	Rs. 272,645	435,342	...	—	10,175
Of which overdue ...	Rs. 160,561	11,916	...	—	300

M. BURRENCHOBAY, *Joint Registrar,*
Co-operative Credit Societies.

Division of Plant Pathology

1. General

The activities of the Division were chiefly concerned with the execution of the Food Production Scheme, and in consequence little research work could be carried out on plant diseases. The writer continued to assist Mr. G. P. Langlois in connection with Food Production on estates cultivating more than 200 acres sugar cane, and acted for him on his departure on sick leave in November. The Assistant Plant Pathologist and the Plant Inspector continued to serve as Regional and Assistant Regional Food Production Officers in the northern districts of the island.

2. Diseases of food crops

A.—MAIZE.

No serious outbreak of disease, already recorded in the Island, was met with. An apparent bacterial leaf disease of maize was investigated at Richelieu Experiment Station.

B.—MANIOC.

Dieback of manioc (*Glaucosporium manihoti* Hen.) caused some damage to manioc plantations during the winter months. The areas attacked however were small.

A suspected bacterial disease of manioc resulting in a dieback of the stems occurred in isolated instances in some fields in the North of the island.

C.—SWEET POTATO.

A serious disease of sweet potato (anthracnose type caused by *Colletotrichum* sp. and not previously reported in the island) occurred at Union Park Estate. (See part I, paragraph 7). About 100 acres of sweet potatoes, planted at various dates, were thus destroyed. Experiments are in progress on varietal resistance and effect of time of planting on the incidence of the disease. A storage lot of sweet potato was investigated, and its cause traced to *Rhizopus* sp.

3. Miscellaneous

The Plant Pathologist and Assistant Plant Pathologist lectured 5 hours a week at the Agricultural College except during the second term when Mr. A. de Sornay, Acting Statistician, took over the Plant Pathologist's lectures in Botany.

The writer and the Senior Agricultural Officer worked out a scheme for the production of vegetable seeds. The results obtained will form the subject of a special report.

P. O. WIEHE,
Plant Pathologist.

Sugar Technological Division

1. Visits to Factories, Investigations, etc.

Thirty-five sugar factories were visited by the Sugar Technologist and his Assistant during the year under review as well as the eleven distilleries producing power alcohol, high degree phlegms and rum.

Investigations were carried out in several factories particularly in connection with the milling work. The share of work of each of the individual units of the tandems was determined; the results obtained have demonstrated the fundamental importance of preparatory devices. In many cases inferior work is to be attributed to inefficient cane cutters or crushers. In many cases the ratio front to back mill openings is excessive, the ratio often being higher than 2. The front opening could in general be reduced by increasing the gripping power of the rollers by special grooving. The analysis of the bagasse leaving each mill has enabled in a number of cases the re-setting of the rollers with increased efficiency.

2. At the request of one factory, investigations were made concerning a new process of sugar boiling recently installed in that factory.

An outline of the process, known as Bourgault process, is as follows—

Part of the contents of a pan originally at a high purity is removed during a strike, the crystals are separated in the centrifugal and the runnings are returned to the same pan. The operation is repeated a number of times until the desired exhaustion is obtained.

It was found that by this process an economy in heat is realised; a low purity of final molasses is attained accompanied by a low percentage of molasses on weight of cane. The conclusion is that the process promises well and should be tried in other factories.

Advice was given when sought for and routine analytical work carried out for the factories.

2. Investigations on the production and use of Power Alcohol

At the beginning of the year under review the power alcohol manufactured by a few of our distilleries was not in accordance with the standard quality required by the law. The distilleries were advised as to the method to be adopted for the production of neutral alcohol and it can now be safely stated that the problem of acid carburant is under complete control.

3. Production of Sugar Bags

The experiments at the Government Sack Factory were concluded. A dozen of light woven bags, coated with paper paste produced from bagasse, were tested at the docks. The bags passed through 40 per cent. of the tests when bursting occurred. The main reason being that the strain instead of being taken by the fibre was taken by the paper. It is hoped that it will be possible to continue the experiments under more favourable circumstances and with more adequate machines for the manufacture of the paper paste and the spreading and drying of the paste.

4. Limestone Analyses

Local corals both *Tête de Mort* and *Platin* were analysed with a view to producing lime of better quality. The determinations included moisture, loss of ignition, CO_2 , silica, mixed oxides, calcium oxide, magnesium oxide, sulphate, chlorine and alkalis.

The results have shown that *Tête de Mort* is superior to *Platin* for lime production, the former containing a higher percentage of calcium oxide and less magnesia and mixed oxides.

When washed in running water or in open air (rain) both *Platin* and *Tête de Mort* lose their alkalis and chlorine and give in the lime kiln a purer lime.

In conclusion it might be said that lime used in building construction, and also as a chemical in factories, should be produced from *Tête de Mort* which has been previously washed.

5. Controle Mutuel and Factory Results

Thirty-three factories contributed to the fortnightly returns which were distributed as usual.

The sucrose content averaged 14.07 as compared with 13.73 and 13.27 in 1942 and 1941 respectively. The quality of the juice was satisfactory. The average purity of the mixed juice was 86.1 as compared with 85.9 and 85.3 in 1942 and 1941 respectively.

6. Educational

The usual lectures and practical demonstrations were delivered by the Sugar Technologist and Assistant Sugar Technologist to students of the Agricultural College, who were also taken on visits to sugar factories.

7. General

Central Board.—The technical work and other duties relative to the administrative work of the Central Board were discharged by the Sugar Technologist and Assistant Sugar Technologist with the help of the officers of the Board.

The Sugar Technologist and the Assistant Sugar Technologist acted as Technical Advisers to the Mauritius Supplies Control Board.

The Assistant Sugar Technologist sat on a Committee instituted by the Société des Chimistes to study the drying of maize.

8. Staff

The new post of Scientific Assistant was filled up by Mr. F. Durocher-Yvon, a holder of the diploma of the Agricultural College.

R. AVICE,
Sugar Technologist and Registrar,
Central Board.

Division of Entomology

1. Staff

As a result of the appointment of the Entomologist as Major in the R.A.M.C., the Assistant Entomologist and the Scientific Assistant were appointed to act as Entomologist and Assistant Entomologist respectively as from the 30th July, 1942.

The Chief Phytalus Officer was granted 3 months vacation leave as from the 1st July to the 30th September. As a measure of economy the services of Miss A. M. Guillemin were dispensed with as from the 1st August.

As in preceding years, the Acting Entomologist devoted part of his time as officer in charge of the Entomological section of the Anti-Malaria Campaign (26 E.A. Mob. Mal. Sec., E.A.A.M.C.)

The Acting Assistant Entomologist and the Chief Phytalus Officer acted during the year as Assistant Regional Food Production Officers and a great part of their time was devoted to this war work duty. The laboratory Attendant M. Paniapen continued to work, whole time, as Field Agent in the Malaria Section.

2. Pests of Sugarcane

A.—*Phytalus Smithi*, ARROW (= *Clemora* (*Lachnosterna*) *Smithi* (ARROW)).

Owing to the present war conditions, it has not been possible to carry out large surveys with a view to assessing the intensity of infestation and the spread of this pest in the various cane planted localities of the Island. During the year under review, one new centre of infestation was recorded at St. Félix, a locality in the remote South of the Island.

As no regular surveys of parasites were carried out during the year, their relative occurrence and incidence could not be ascertained.

At Grès Bois, an estate in the Grand Port District, a recrudescence of the pest was reported; the reinfestation was not on a very large scale. Control measures to cope with the pest were given to the planters concerned. In general, severe attacks on cane plants, as was common 10 years ago, have not been reported since the last few years, in spite of the cessation of hand collection of adults. The systematic planting of *Phytalus* resistant cane varieties together with the beneficial effect of the work of parasites may explain this more hopeful state of affairs.

B.—SPOTTED BORER: *Proceras sacchariphagus* BOER

No very severe infestation of borers was reported during the year. The mass breeding and liberation of *Trichogramma australicum* Gir. had to be discontinued through lack of breeding media for *Corvina* and *Sitotroga*, viz., maize grains, gram, rice, etc. The experiments at Belle Vue (Harel) and Beau Champ S.E., were consequently given up and closed as from April, 1943.

During the four months, January to April, a total of 157,000 parasites were bred; of these 77,000 and 32,000 were liberated at Belle Vue (Harel) and Beau Champ respectively.

In presence of this unexpected state of affairs due to war conditions, the results of the third year's experiments on the mass breeding and liberation of *Trichogramma* were subsequently completely frustrated.

The borer resistant cane variety trial plots started in 1941, in co-operation with the Sugarcane Research Station were destroyed by fire in December before any borer survey could be carried out.

C.—Scale insect: *Anilacaspis tegalensis* (ZEHT.)

On the whole, the position of the sugar cane scale was stationary during the year under review. Another new centre of infestation was reported in the South of the Island, at Souillac. The scale was detected on P.O.J. 2878 in this new locality.

The Coccinellid beetles *Chilocorus politus* Muls., *Chilocorus nigrinus* Muls. and *Cybocephalus* sp. were present in fair numbers.

3. Pests of food crops

A.—MAIZE.

The young maize plantations have suffered somewhat from attacks of cutworms (*Prodenia*, *Spodoptera* and *Agrotis*) and of *Crambus malacellus* Dup. A few older plantations were severely attacked by the pink borer *Sesamia vuteria*, Stoll.

Whenever possible, advice to cope with these attacks was issued to the planters concerned. The practice of growing plant traps (especially in localities where *Crambus* is prevalent) previous to regular plantation was adopted by a few planters with good results. The cleaning of fields by fire, before plantation, gave rise in most cases to severe recrudescence of *Crambus*.

B.—SWEET POTATOES.

A severe outbreak of the leaf miner, *Elachista* sp. was reported in a sweet potato field, in one locality of the South of the Island. It was noticed that affected plants recover as soon as sufficient rain occurs to promote rapid growth of plants.

Thousand of mynah birds (*Acridotheres tristis*) were observed preying on the sweet potato leaf roller, *Trichoptilus whalbergi* Zell. in some badly infested fields. This predator may to some extent be a natural check of the pest.

C.—RICE.

A survey of the insect pests of rice was made in the whole Island. The main insect of importance was *Crambus malacellus* Dup. It was found that seedlings when transplanted are more vigorous and appear more resistant to the attacks of *Crambus* than when seeds are sown directly in the field. No insects were found attacking inflorescences. The pink borer, *Sesamia caturia* Stoll., was seldom found as a pest of this plant.

4. Pests of Stored Products

Storage of beans.—Experiments were carried out with the view to ascertaining the best fumigant to be used against the bean weevils, *Bruchus* spp. It was found that carbon tetrachloride, at the rate of 1 c.c. per kilo of beans, with a fumigation period of 84 hours, gave the best results for the black variety, whilst for the red variety, O-dichlorobenzene, at the same dose and contact period, gave the best results. Ordinary petrol, which is more easily obtainable on the local market at the present time, also gave good results. This fumigant was therefore recommended to the public for the control of the bean weevils at the rate of 1 c.c. petrol per kilo of beans with a fumigation period of 24 hours and subsequent exposure to the sun.

Experiments to determine the residual effect of fumigants on beans are under observation.

5. Miscellaneous Pests

(a) THE BEAN FLY (*Melanoagromyza phaseoli* COQ.).

A series of experiments are in progress in order to test the resistance of different varieties of beans and peas to *Melanoagromyza* attacks and to study the response of bean plants to spraying of Diesel oil—clay emulsion at different concentrations.

(b) RED ANTS (*Solenopsis geminata* F.).

In view of the contradictory success obtained with thallium sulphate for controlling red ants in other countries, experiments in this connection are being carried out.

Diesel oil—clay emulsion: a 5 per cent. emulsion was found to be the best concentration for the treatment of red ant nests with this contact insecticide. A repellent diesel oil—clay emulsion at a strength of 6 per thousand was found to give good results in seed beds.

(c) INSECT ATTACKING FOREST PLANTS.

During the year, the Forest Department forwarded numerous samples of wood attacked by insects, for identification. The following insects were recorded:

(i) *Heterobostrychus equalis* Waterh. on eucalyptus and other various timbers.

(ii) *Xyleborus camphoræ* Hag. on Pinus teada.

(iii) *Xyleborus* spp. on various forest plants.

(iv) *Platypus* spp. (2 species) on Eucalyptus and Tambalacoque.

(v) *Sinoxylon cornigerum* Gerst. on Eucalyptus, Terminalia, etc.

(vi) *Bostrychophytes cornutus* Ol. on Eucalyptus.

6. Control of Cordia Interrupta

In view of the ever increasing demands of the planters for a campaign against the black sage, *Cordia interrupta*, in the Island, a scheme for the introduction of parasites from countries where *Cordia* is known to exist, but not as a noxious weed, has been prepared in that connection and is under consideration. Since August 1943, an officer of the Entomological Division is working on the insect and plant ecology of *Cordia* in the Island, pending the introduction of parasites from other countries.

7. Insecticides**(a) DERRIS.**

This promising insecticide was tried out against several insect pests during the year under review. A 40-50 per thousand aqueous decoction killed most caterpillars and aphids on cabbages, etc. At this same concentration, lice commonly found on cattle, were also killed.

Industrial alcoholic extractions of the chopped roots yielded an average of 8.3 per cent. extract. This extract is being tested against flies, mosquitoes, etc.

Propaganda for the planting of Derris was made to planters.

(b) PYEX.

The locally prepared petroleum-pyrethrum fly and mosquito spray had an ever increasing success from the public since its original preparation in 1942. About 400 gallons of this insecticide were prepared during the year for use by the public and Colonial Government Institutions.

8. General

Lectures and practical demonstrations in Zoology and Entomology were delivered to students of the Agricultural College by the Acting Assistant Entomologist, Mr. R. Mamet and by Mr. J. Vinson respectively.

As a propaganda, advantage was taken of a "Fourre Exposition" held at Curepipe, in December, 1943, to illustrate the various local insect pests attacking food crops and food products in the Colony, together with their control measures.

As usual, close contact with the planting community was kept by the officers of this Division.

A. MOUTIA,
Acting Entomologist.

Chemical Division

Investigation Work

1. Aloe Fibre

A practical process to obtain the colouring of the aloe fibre, similar to that of pite, was worked out with success. A tincture of 3 Baume concentration was used, obtained from a water extraction of Bois Noir (*Albizzia Lebbeck*) sawdust.

This tincture was sprayed on the fibre cloth at the Sack Factory during the last stages of its manufacture. Special nozzles working under a pressure of 20 lbs. per square inch were used for such spraying.

The number of nozzles and the correct distance were fixed up in order (a) to cover uniformly with the spray, the whole surface of the aloe cloth exposed (b) to give the optimum moisture required at this stage of manufacture.

According to figures obtained 200 litres of tincture would be required for an output of 8,000 yards of aloe cloth per day.

With regard to the improvement of the retting process, the problem is more intricate and is still in hand, but experiments such as (a) finding substitutes for soap (b) the use of ammonium sulphate in the fermenting vats as a nitrogen supply for the anaerobic bacteria as well as (c) the action of lime in decreasing the acidity of the fermenting medium, were tried.

The importance may be emphasized here, however, of the washing of the fibre after the retting process when the scraping has not been satisfactory.

2. Hydnocarpus Oil

The hydnocarpus oil supplied to the Leper Hospital during the year "maintains its good quality" reported the Medical Superintendent of the Hospital. The supply, limited to the amount of seeds available, was only of 3 litres whilst the annual local requirements amount to about 12 litres.

3. Maize Bran

A successful attempt was made at the Maize Mill of Richelieu to put on the market only one grade of maize bran.

A sample, carefully collected, has given the following composition—

Moisture	...	...	11.80	per cent.
Proteins	...	...	8.25	"
Carbohydrates	...	...	56.96	"
Fat	...	...	9.50	"
Fibre	...	...	8.37	"
Ash	...	...	5.12	"

4. Drugs

The ephedrine yielding plant *Ephedra Sinica* thrives well at Barkly Experimental Station. A sample was examined last year for its chemical content but the amount of alkaloid detected was low. Another sample was analysed in the year under review but results are far from encouraging, only .041 per cent of total alkaloids was found.

5. Artificial Fertilizers

An important shipment of nitrate of soda, seriously damaged by fire and sea water, was apparently in a very bad condition. A chemical investigation revealed, however, that the quality of the salt was only slightly altered and was of a normal commercial value so far as its nitrogen content was concerned.

6. Carbonized bagasse dust

At the request of an estate Manager, an investigation was undertaken in order to determine the agricultural value of carbonised bagasse dust collected by a special device from the chimney flue.

The following data were obtained and for comparison the composition of the furnace ashes from the same estate are given—

	Carbonised bagasse dust	Furnace ashes
	(1)	(2)
P ₂ O ₅ 1% citric acid soluble	0.15	0.29
K ₂ O 1% citric acid soluble	1.36	0.79
		0.88

7. Tobacco

Progeny plots were planted with the progeny of plants selected by the method already described, but climatic conditions were so adverse that the "selection" experiment was a failure as practically no leaves were available from the tobacco plants.

8. Milk

The analysis of samples of milk from the Government Dairy was performed as usual but unfortunately in the second quarter of the year a serious reduction in the yield occurred and caused such a shortage that the analyses had to be postponed until June. The sampling was therefore performed only in January, June and November respectively. The figures below are in keeping with those of the previous years

	Total Solids	Fats
	per cent	per cent
Morning ...	11.9	3.4
Evening ...	12.9	4.4

9. Routine Analysis

84 samples were received involving 201 determinations. The research work involved the analyses of 20 samples, 40 estimations being carried out.

10. Miscellaneous

At the end of July, through the appointment of Mr. A. de Sornay as acting Registrar of the College of Agriculture and as Statistician, the Chemist was put in charge of Plaine Wilhems and Black River districts as Regional Food Production Officer. The Scientific Assistant, Mr. R. Rivalland, devoted most of his time as Inspector in the Food Production Scheme. Mr. E. Haddon is in charge of the work in connection with the alœ fibre investigation,

R. LINCOLN,
Chemist.

Tobacco Research Station

Despite reduced staff and pressure of work in other directions due to war conditions every effort was made to carry out the full research programme. Apart from one maize experiment, no work was done on rotation crops or on disease resistance trials in connection with tobacco.

Climatic Conditions

The climatic conditions were not generally favourable, the drought which prevailed during the months of June to November seriously affected the later plantings of tobacco. The meteorological recordings for the year were—

		Temperature Fahr:					
Month	No. of days	Rainfall	Mean		Absolute		Mean Relative Humidity
		Inches	Max:	Min:	Highest	Lowest	
January	... 19	7.00	84	80	89	72	71.7
February	... 14	4.24	85	77	87	70	64.0
March	... 12	5.58	84	76	89	70	67.7
April	... 6	1.24	82	73	86	62	67.3
May	... 13	2.94	79	70	86	62	66.3
June	... 9	0.44	76	68	83	60	61.6
July	... 8	0.49	75	67	80	58	61.3
August	... 9	0.67	75	68	81	60	61.6
September	... 5	0.43	76	67	81	56	57.6
October	... —	—	79	71	83	63	52.0
November	... 4	0.91	82	67	85	62	55.6
December	... 12	9.41	83	72	89	66	63.5
Total	... 122	33.35	80	70	89	56	

Research Work

Tobacco Breeding

1. In view of the lack of assistance it was decided to devote the main effort to the progeny plots from variety crosses and the progeny from colchicine treated seed which in the previous year had shown great promise, though selection work in connection with other varieties and strains was not overlooked.

VARIETY CROSSES. (Series V.)

2. F.2 progeny* from five crosses made in 1941 were planted in plots, these were from the following crosses—

Cross No.	Parentage	No. of selection
V. 4-41 ...	White Stem Pearl × Cash	... 2
V. 7-41 ...	White Stem Pearl × Amarello	... 1
V. 9-41 ...	Bonanza × Amarello	... 2
V. 10-41 ...	White Stem Pearl × Yellow Mammoth	... 2
V. 11-41 ...	White Stem Mammoth × Bonanza	... 2

There was considerable segregation in all plots but this was most marked in the Amarello crosses in which the majority of the plants were stunted and undesirable. The progeny from the other crosses were more vigorous particularly in the first named. Further selections were made to test F. 3.

3. During the previous year 14 back crosses were made between the selected F. 1 plants from the above crosses and the parent varieties. Unfortunately red ants infested the seed beds and no seedlings were obtained from eight of the crosses including the back crosses to Amarello. The crosses from which plants were obtained were—

Cross No.	Percentage	No. of crosses
V. 1-42 ...	V. 11-41-1 × Bonanza	... 1
V. 2-42 ...	V. 10-41-1 × Yellow Mammoth	... 1
V. 4-42 ...	V. 4-41-1 × Cash	... 2
V. 6-42 ...	V. 4-41-3 × Cash	... 1
V. 11-42 ...	V. 4-41-4 × White Stem Pearl	... 1

There was considerable segregation in the progeny from all these crosses and this was particularly noticeable in the size, shape and habit of leaves. It was not possible to do an analysis of the types. Selections were made from each cross to test F. 2.

4. During the year 1942 seven crosses were made between Amarello and other varieties viz—

Cross No.	Parentage
V. 12-42 ...	Jamaica Wrapper × Amarello
V. 13-42 ...	Charlie's Special × Amarello
V. 14-42 ...	Piet Relief × Amarello
V. 15-42 ...	Bonanza × Amarello
V. 16-42 ...	Amarello × Bonanza
V. 18-42 ...	Bonanza × Amarello
V. 19-42 ...	Charlie's Special × Amarello

The progeny from all the above were planted out rather late in the year and in consequence suffered from the drought but though slow in growth they were considerably better than progeny from selfed seed of the parent varieties sown and planted at the same time. In every case Amarello characteristics were dominant and hybrid vigour pronounced, also the leaf obtained from these hybrids was superior to Amarello.

CROSSES WITH PLANTS FROM COLCHICINE TREATED SEED. (Series X).

5. In the previous annual report reference is made to the crosses carried out between plants raised from colchicine treated seed of the variety Bonanza and Bonanza, and with Amarello. During the year under review progeny plots and rows were planted with selections from nine of the crosses to test F. 2. In the previous year the F. 1 progeny from the Amarello crosses were the most promising being very vigorous with Amarello characteristics dominant, and during the year under review plants from selfed seed from seven selections were planted out viz—

Selection No.	Parentage
X. 3-41-1 ...	C.E. 8-41 × Amarello
X. 3-41-2 ...	... × ...
X. 4-41-1 ...	C.E. 26-41 × ...
X. 4-41-2 ...	... × ...
X. 4-41-3 ...	... × ...
X. 5-41-1 ...	C.E. 25-41 × ...
X. 5-41-2 ...	... × ...

The F. 2 progeny from all these crosses were far superior to the F. 2 progeny from the variety cross Bonanza X Amarello referred to previously in Series V and the segregation was not so pronounced. Generally the plants were strong with Amarello characteristics mainly dominant though there was considerable variation in rate of growth, size, shape and habit of leaves, and in the colour and the size of the flowers,

6. During the previous year eight back crosses were made between the selected plants and the parent varieties and strains viz—

Cross No.	Parentage
X. 4-42 ...	X. 4-41-1 × C.E. 26-41-3
X. 5-42 ...	X. 5-41-1 × C.E. 25-41
X. 6-42 ...	X. 4-41-1 × Amarello
X. 7-42 ...	X. 4-41-2 × C.E. 26-41-3
X. 8-42 ...	X. 4-41-3 × C.E. 26-41
X. 11-42 ...	X. 3-41-2 × Amarello
X. 9-42 ...	X. 4-41-2 × Bonanza
X. 10-42 ...	X. 5-41-2 × Bonanza

There was considerable segregation in the progeny from all the above crosses and the most vigorous plants had Amarello characteristics dominant. It was not possible to carry out a complete analysis but an analysis was carried out according to type of growth in three of the F. 2 and four of the F. 1 of the back crosses with the following results—

F. 2 PROGENY

Type of Growth

Cross No.	Amarello No.	Bonanza No.	Indeterminate No.
X. 3-41-1 ...	120	20	25
X. 4-41-1 ...	95	17	54
X. 4-41-2 ...	101	25	48

BACK CROSSES F. 1

Type of Growth

Cross No.	Amarello No.	Bonanza No.	Indeterminate No.
X. 4-42 ...	28	41	14
X. 6-42 ...	56	1	25
X. 7-42 ...	36	42	6
X. 11-42 ...	38	26	17

Number X. 4-42 and X. 7-42 were back crosses to the female strain, the others to the male variety Amarello.

From the foregoing arbitrary analysis the dominance of the variety Amarello is clearly shown. It is unfortunate that time did not permit of a more detailed analysis which would have enabled a clearer view of the genetic constitution of the hybrid being obtained.

7. Progeny from 10 selections from 6 crosses between plants raised from colchicine treated seed and the parent variety were planted out to test F. 2 viz—

Selection No.	Parentage
X. 1-41-1 ...	C.E. 7-41 × C.E. 40-41
X. 11-41-1 ...	C.E. 14-41 × Bonanza
X. 11-41-2 ...	× "
X. 14-41-1 ...	C.E. 16-41 × "
X. 17-41-1 ...	C.E. 18-41 × "
X. 20-41-1 ...	C.E. 15-41 × "
X. 20-41-2 ...	× "
X. 23-41-1 ...	C.E. 6-41 × "
X. 23-41-2 ...	× "
X. 23-41-3 ...	× "

The most remarkable feature in the progeny from the foregoing selections was the great variation between the selections, in some instances, notably X. 1-41-1 there was no observable variation in the

progeny which appeared to have a tendency to revert to the original parent variety type, and also appeared to be more vigorous; whereas in X. 17-41-1 and X. 20-41 the segregation was more marked in every respect, no two plants being alike; in the remaining numbers the segregation was slight. Apart from X. 1-41-1 there were no promising types though some selections were made for a further trial with F. 3 progeny, if possible.

F. 2 COLCHICINE TREATED PLANTS.

8. Progeny from 31 promising F. 1 selections were planted in progeny plots during the year and, as far as possible, 168 plants of each strain were planted out. All plots made good progress despite unfavourable conditions and there was very little segregation observable and the majority of the strains appear to have reverted to the original parent variety type; in some instances they were unlike the parent type and the selections C.E. 32-41, C.E. 35-41 and C.E. 40-41 are most promising types. Ten selections were made from seven strains to test F.3.

In addition to the foregoing, progeny from 15 other F. 1 selections were planted out, one row of each being planted. The F.1 from these strains were not promising and the parents had been severely affected by the colchicine treatment. With the exception of one strain viz. C.E. 5-41, there was most marked segregation plants of all sizes and types being obtained with varying types of inflorescence, colour of flowers; shape, size and habit of leaves. In the strain C.E. 5-41 the tendency for reversion to the original parent type was apparent, though in the other strains this was not noticeable at all. Twenty two selections were made for a further study of the F. 3.

VARIETY SELECTION.

9. Plots of all varieties were planted with progeny from selected plants and further selection carried out. Quantities of seed for distribution to planters through the agency of the Tobacco Board were obtained. The control of the seed supply and the distribution of seed of the better type of Amarello has already resulted in a better type of leaf being delivered to the Tobacco Board and there should be a further gradual improvement during the next few years.

VARIETY TRIALS.

10. Three variety trials were laid down during the year but unfortunately owing to nematode attack and drought, no reliable results were obtainable. This is the first occasion on which nematode has been encountered on the Station and a careful examination of the seed beds clearly proved that the nematode was not in the seed beds. As one part only of the field was affected it is difficult to account for the attack.

Fertilizer and Field Experiments

11. The fertilizer and field experiments planned for the year comprised—

(a) Spacing and Variety Trial to test three varieties at six spacings.

(b) Phosphate experiment to test three levels of phosphate from two sources.

(c) Fertilizer experiment to test time and method of application and source of phosphate.

(d) Topping and Suckering experiment.

All the above experiments were planted but, with the exception of (c), no reliable results are obtainable owing to attacks of Blank Shank in case of (a) and (d) and nematode attack in the case of (b).

(c) FERTILIZER EXPERIMENT TO TEST TIME AND METHOD OF APPLICATION AND SOURCE OF PHOSPATE.

12. The treatments in this experiment were—

Three times of applications viz :

(1) All applied before planting.

(2) Half before planting and half three weeks later.

(3) One third before planting, one third two weeks later, and one third one month after planting.

Three methods of application viz :

(A) Applied around the plants.

(B) Broadcast in the row.

(C) Applied in furrows or bands on each side of the row.

Two sources of phosphate viz :

(X) Precipitated Phosphate.

(Y) Guano Phosphate.

The amount of plant food applied per acre in each treatment was 40 kilos P_2O_5 from above sources, 12 kilos N. in form of sulphate of ammonia and 12 kilos K, in the form of sulphate of potash. The experiment was laid out in a partially confounded incomplete block design with two replications.

13. The drought conditions which prevailed throughout the greater part of the growing season reduced yields somewhat and growth was slow and somewhat irregular. There was no observable difference in the rate of growth of the various treatments.

The results may be summarised as follows—

YIELD IN KILOS PER ACRE $\pm$ 23

Source of Phosphate	Times of Applications			Mean $\pm$ 13
	1	2	3	
Precipitated	353	320	340	338
Guano	258	297	303	286
Mean $\pm$ 16	306	308	321	312

YIELD IN KILOS PER ACRE $\pm$ 23

Source of Phosphate	Method of Applications			Mean $\pm$ 13	
	1	2	3		
Precipitated	354	352	307	...	338
Guano	323	273	261	...	286
Mean $\pm$ 16	339	312	284	...	321

CONCLUSIONS

14. Precipitated phosphate gave significantly higher mean yields than Guano Phosphate. There is no significant difference between yields from the different times of applications but it will be observed that in the case of precipitated phosphate the highest yield was obtained when all was applied before planting, but the reverse was the case with guano phosphate. The differences are not generally significant, though precipitated phosphate gave a significantly higher yield than the guano when the fertilizer was all applied before planting.

In the methods of application the method A of applying around the plant was generally significantly better than the method C of applying in furrows or bands on each side of the row.

Rotation Crops

MAIZE

15. During the year one fertilizer and spacing experiment was carried out after which all work in connection with maize was taken over by the Geneticist of the Sugarcane Research Station, who commenced breeding work in connection with maize at the Station. The experiment was designed to test three levels of both nitrogen and phosphate and two spacings; the treatments being—

N. 1. No nitrogen

N. 2. 10 kilos nitrogen per acre

N. 3. 20 " "

P. 1. No phosphate

P. 2. 20 kilos P_2O_5 per acre

P. 3. 40 " "

S. 1. Spacing 3 feet by 1 feet

S. 2. Spacing 3 feet by 2 feet

The fertilizers used were Sulphate of Ammonia and Precipitated Phosphate.

16. The experiment was laid down in a partially confounded incomplete block design with plots of $\frac{1}{10}$ th acre and two replications. The maize was sown on the 6th January, 1944, following good rains and conditions continued favourable throughout the growing period. The results, based on a moisture content of the grain of 12–14 per cent, may be summarised as follows—

YIELD IN KILOS PER ACRE $\pm$ 49

	N. 1	N. 2	N. 3	Mean $\pm$ 27
S. 1	1139	1205	1231	1191
S. 2	1135	1177	1141	1151
Mean $\pm$ 33	1137	1191	1186	1171

YIELD IN KILOS PER ACRE $\pm$ 49				
	P. 1	P. 2	P. 3	Mean $\pm$ 27
S. 1. ...	1133	1175	1267	1191
S. 2. ...	1137	1166	1150	1151
Mean $\pm$ 33	1135	1170	1208	1171

CONCLUSIONS.

17. There are no significant differences between treatments. The application of fertilizers increased the yields but the increases are small and not significant. The increase in yields due to the closer spacing is not significant.

OTHER CROPS.

18. No experiments or trials were carried out with any other crops and all fields not required for experiments were placed under green dressing.

MAIZE DRYING.

19. During the early months of the year the barns at the Station were used to dry maize for Highlands estate and experiments were conducted in order to ascertain the most economical method of drying maize in flue curing barns.

Three methods were tested viz—

- (a) Drying maize in grain placed on a small mesh wire netting floor.
- (b) Drying maize on cobs, by hanging the cobs on rods in a similar manner to tobacco leaves.
- (c) Fitting the barn with cribs.

After several tests it was found that method (c) enabled a greater quantity of maize to be dealt with and was much more economical in labour and fuel. During the year 281 tons of grain were dried for estates.

GEOFFREY CORBETT,
Government Tobacco Officer.

Veterinary Division

Head I

A.—Disease Control

(1) FIELD OPERATIONS.

Trypanosomiasis: 7,834 blood smears were examined and only one case of trypanosomiasis was detected. The causative organism was *T. vivax*. The diseased animal, a draught bullock, was slaughtered for beef.

Piroplasmosis: 10 cases occurred in a breeding herd of cattle where the disease had been recorded intermittently in the past. Three animals died, they were already very weak when the Trypan Blue treatment was applied; the seven others recovered.

Tuberculosis: The number of animals tested by the Government Officers amounted to 819, of which 196 showed positive reactions. The tuberculin used was the P.P.D. Weybridge.

Wire Worms in Sheep: Drenching with Coopers' N.C.A. is giving remarkable results and losses through wire worms have been negligible in all flocks.

(2) RESEARCH OPERATIONS.

Abortion on Cows: Five cases of abortion were recorded during the year on cows of the Government Dairy as against four in the previous year. The anti-streptococcic vaccine was not available for application to the herd, the culture having died out.

B.—Animal Husbandry

(1) FIELD OPERATIONS.

Imported Bulls: The only survivor of the Charolais bulls imported in 1938 is now proving inattentive to cows, as do most of the existing Africander sires imported during the same year. The improvement achieved so far through the importation of these sires is however noticeable in many herds where their progeny may be easily identified owing to their greater development capacity as compared with local animals.

(2) RESEARCH OPERATIONS.

Palmar Breeding Centre: At Palmar Experimental Breeding Centre, the pure Charolais cow born locally died during the year and her pure bred heifer calf is not thriving at all. The long period of drought experienced towards the end of the year has unfavourably influenced the development of the young progeny at this centre.

C.—Improvement of Marketing of Animals and Animal Products

Importation for meat purposes—

From Madagascar	...	1,934 bullocks
From Rodrigues	...	124 "
" "	...	2,296 goats
" "	...	427 sheep
" "	...	1,161 pigs
" St. Brandon	...	18 pigs

For breeding—

From South Africa 8 hens and 2 cocks.

For draught purposes—

From Diego Garcia 4 asses.

NOTE: Periodically the Veterinary Officers visited the slaughter houses of the Colony.

1,534 females of the milch breed have been authorised to be slaughtered during the year after having been examined and found unsuitable for milk production.

D.—Veterinary Education

Students of first, second and third year were lectured during the year by the Veterinary Officer and his Assistant.

Head II

Quarantine

Owing to the shortage of freight, no dogs were imported during the year and the Government Quarantine Stations at Reduit and Fort William were unoccupied.

General

Three members of the Veterinary Staff continued to give assistance under the Food Production Scheme.

F. E. LIONNET,
Veterinary Officer.

Government Dairy

Yield of Milk

The amount of milk produced during the year was distributed as follows

	1943	1942
	<i>Litres</i>	<i>Litres</i>
Supplied to hospitals ...	4,020	13,663
Supplied to customers ...	67,908	67,702
Fed to calves ...	5,961	4,779
Samples for control ...	257	450
Total ...	78,146	86,594

Births

33 calves were born during the year, 18 males and 15 females.

Deaths

2 heifers died at the Royal Botanical Gardens from congestion of lungs.

Sales

19 calves were sold to breeders: 12 males and 7 females. In addition 4 cows which had become unproductive owing to old age, blind teats or sterility were sold to butchers.

Abortion

Five cases were recorded during the year as against four in 1942.

Tuberculosis

Five cows reacted to the tuberculin test which was applied to the whole herd.

One cow which had reacted last year had not been slaughtered being heavily in-calf, and was sold to the butcher during the year.

YVES LEFÉBURE,
Officer in charge of Dairy.

Rodriguez

Climatic Conditions

	Oyster Bay	La Ferme
Total amount of rainfall recorded ...	43.25 ins.	31.76 inches
Number of rainy days ...	175	90
Oyster Bay—Highest rainfall in one month :	April ...	7.15 inches
La Ferme— " " :	April ...	8.01 "
Oyster Bay—Highest rainfall in one day :	9th March ...	2.39 inches
La Ferme— " " :	9th March ...	1.60

General Conditions

The year 1943 has been generally favourable for agriculture. The total amount of rainfall registered was slightly below normal but the distribution has been one of the best on record.

Very good yields of maize were generally obtained in April and May and a second crop, grown in many localities, has given good average returns, especially in Oyster Bay valley.

Sweet potatoes planted on a larger scale have yielded well. An increase in the acreage under manioc was also noticeable. Die-back was prevalent as usual on plantations made in fields exposed to the wind. The bean crop was not satisfactory, due to severe attacks of Rust and Anthracnose ; but the high prices obtained have compensated for the losses. At a time, values were as high as 40 to 42 cents per pound.

The necessity of producing essential food crops, combined with most remunerative prices offered for beans, onion and garlic, have been the cause of a reduction in both the number of tobacco growers and acreage. The leaf that was produced was, generally, of fairly good quality.

Acacia seeds have been selling well at very attractive prices.

Apart from Strongylosis, that caused the death of a certain number of goats and sheep, no animal disease of economic importance has been in evidence during the year. Cattle have been maintained in satisfactory condition, showing once again that the provision of pure drinking water has prevented to a great extent the high percentage of mortality that usually occurred during the dry season before the establishment of drinking troughs in different parts of the Cattle Walk.

The lack of adequate shipping facilities has restricted to a considerable extent the export of animals, this resulting in a substantial proportion of surplus pigs being converted into salt pork and other products that could be shipped as general cargo. There has been a great increase in the number of animals killed for local consumption. As many as 15 to 20 head of cattle being slaughtered weekly as compared with 3 to 6 during the preceding years.

Work of the Agricultural Division

Food Production has claimed close attention and at the Experimental Station work has been planned with the object of raising Rodrigues food production to a scale that would be commensurate with the present requirements. Every effort was made to stimulate the cultivation of sweet potatoes and manioc. Planting material of the latter has been widely distributed. New varieties of sweet potatoes were produced from seed. Three seedlings were discarded and the others are still under test. From some of these most promising results have already been obtained. Observation plots were established in different localities and planting material has also been forwarded for experiments to the Agricultural Department of Mauritius.

No definite results can yet be given about experiments with maize grown in association with manioc. Further trials on other lines than the ones already carried out are contemplated for next season.

Two of the varieties of yams recently introduced have produced very high yields. A fair amount of tubers have been obtained for propagation.

With a view to accelerating the growing of bread fruit trees, roots were imported from Mauritius, practically none being available locally. The transit has apparently had a damaging effect on the roots for out of the 372 placed in the propagator only 26 had sprouted by the end of the year.

A great number of Citrus sp seedlings raised for propagation has been destroyed by cut worms, poison bait and hand picking could not prevent the pest from causing extensive damage.

An adequate supply of maize seed has been stored safely in drums as an insurance against a shortage of seeds for replanting in case of a failure of the first crop due to cyclones or adverse weather conditions.

Plant Pests and Diseases

Special attention has been devoted to the control of red ants and legislation has been passed in April ordering the treatment of the infested lands. Advantage has been taken of the presence in the Island of Captain A. North-Coombes, Agronomist of the Department of Agriculture, now serving in the Forces. This officer has carried out a general survey of the position and has made recommendations on the best method of combatting the pest. Diesel Clay emulsion has continued to give satisfactory results and a considerable number of nests have been destroyed, thus minimising to a great extent the sources of infestation. The undertaking is demanding constant, patient and above all uninterrupted efforts owing to the rapid rate at which the insect increases.

Mr. Bedsy, the Inspector of Co-operative Credit Societies assisted the Agricultural Superintendent in the control operations. The inhabitants have also co-operated to a certain extent especially the owners of private properties.

The campaign against *Citrus Canker* has been continued. Whilst the area from which the disease has been eradicated is increasing, two new centres of infection have been detected on the border line of the non-infected areas. These have promptly been dealt with and it is expected that control measures taken in time will prevent any further spread.

Agricultural Instruction

The value of soil conservation has again been effectively demonstrated. Soil defence works were carried out this year at St. Gabriel and at River Coco, Tréfles, 3 Soleils, Brulé, Patate Theophile and Camp Baptiste on about 30 acres of lands leased to 5 different Co-operative Societies.

Lessees of new lands at Oyster Bay who had been ordered in 1942 to have anti-erosion works performed on their lands have acted accordingly. Thirty of them who had performed real efficient work have been granted one years free rent. The Order has been extended during the year to lessees of lands at Vainqueur and Mt. Goyave. As from October, whenever a new lease is signed by a farmer, a notice is served upon him, ordering him to carry out anti-erosion works on the land within a period of three months.

As an outcome of the above measures, the practice of soil conservation is gradually gaining popularity. Some lands are providing striking examples of the progress achieved.

The school garden of Lataniers has continued to work under the control of the Inspector of Co-operative Credit Societies.

Establishment of Windbreaks

The areas planted in 1942 had to be replanted this year, the great majority of seedlings having died during the drought or destroyed by outbreaks of fire. The windbreak established alongside the demarcation line of the Cattle Walk has been extended to Cascade Victoire. Seedlings of *Casuarina* and *Labramia bojeri* have been raised for planting in 1944.

Prize Holding Scheme.—The working of the Scheme has been reorganised. Farmers who have been winners of a first prize during three consecutive years and who must have by then realised the benefit to be derived from good cultural methods, are to be classed "Hors Concours", thus allowing beginners to participate in the competition with a better chance of being awarded a prize. Thirty applications have been received and judging will take place during the early months of 1944 when lands are being inspected for remittance of rents.

Land Tenure.—For the purpose of supplying lands to lessees which had to be removed from certain areas on steep slopes liable to excessive erosion and from areas demarked as Crown Forests, Government has acquired the property Baie Malgache of an extent of 354 acres.

The post war problem of providing agricultural lands for men now engaged on active service abroad has been raised and is under consideration.

Pasture Improvement

Works in connection with pasture improvement have been as progressive as availability of labour would allow. Drinking troughs have been maintained in good working order and a new one has been built at Riviere Banane. *Lantana* *sp.* that are threatening to invade different sections of the Island have been combatted. Destruction of other undesirable plants was made on a limited scale.

Acacia and different varieties of pasture grass have been planted on small areas at Baie Topaz.

No planting of shade trees has been made. This could only have been effected when the majority of labourers were busily engaged in the cultivation of food crops.

RENÉ JAUFFRET,
Agricultural Superintendent.

PART III

Legislation

The following Ordinances, Proclamations and Government Notices were passed during the year—

Ordinance No. 35—The Sale of Canes (Control) (Amendment) Ordinance, 1943.

Ordinance No. 37—The Tea Industry Control Ordinance, 1943.

Proclamation No. 6—To control the Plant Disease due to the Red Ant.

Solenopsis geminata F.—In the Island of Rodrigues.

Proclamation No. 11—To proclaim the price to be paid for "Uba de Riche Fond" Varieties of Sugar Cane in the areas specified in paragraph (1) of Proclamation No. 20 of the 17th May, 1940.

Proclamation No. 12—To proclaim the price to be paid for "Uba de Riche Fond" Varieties of Sugar Cane in the areas specified in paragraph (1) of Proclamation No. 18 of the 22nd July, 1940.

Government Notice No. 24—The Animal Diseases (Consolidation) Ordinance, 1925—Prohibition of Import of Hides, Carcass, Fodder, etc.

Government Notice No. 77—Sale of Canes (Control) Ordinance, 1941—Regulations under—Payment of Rs. 20 for re-examination of Weighbridge.

Government Notice No. 90—The slaughtering of cattle Restriction Ordinance, 1918—Regulations made under (No cow or heifer to be slaughtered under 5 years).

Government Notice No. 151—The Animal Diseases (Consolidation) Ordinance, 1925. Regulations under. Disposal of diseased bovines.

Government Notice No. 438—The Emergency Powers (Colonial Defence) Orders in Council, 1939-40—Lease of Crown Lands for rice cultivations to be signed by the Director of Agriculture.



